

REMARKS

I. Disposition of Claims

Claims 1, 2, and 4-6 are currently pending. None are amended in this response.

II. Compliance with 35 U.S.C. 112, 2nd ¶

The Examiner has rejected the pending claims under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner indicates that the term “film-forming polymer” in claim 1 should be “an overcoat forming polymer.” However, the term “film-forming polymer” is a term of art that is readily understood by those skilled in the art.

The present specification (page 13, line 7 - page 14, line 10) uses the term “film-forming polymer” in its proper context. In addition, the term “film-forming polymer” is described in the claims of a large number of issued patents, for example, as shown in the following table:

U.S. Patent	Claim
6,946,518	1
6,946,122	4
6,939,916	2
6,933,014	31
6,916,493	32
6,903,158	9
6,897,191	1
6,896,963	10
6,887,644	1

As can be seen from the above, “film-forming polymer” is a commonly used phrase by those skilled in the art, and therefore does not render the claim indefinite. Therefore, the pending claims should not be rejected under 35 U.S.C 112, second paragraph.

III. Novelty and Non-obviousness over JP 11-140360

The pending claims have been rejected under 35 USC 102(b) as anticipated by, or in the alternative, under 35 USC 103(a) as obvious over JP 11-140360. The Examiner has alleged that the non-discoloring layer described in JP’360 is identical to the overcoat layer of the present

invention. However, this layer does not meet all of the limitations of the overcoat layer recited in the presently pending claims. In particular, the presently pending claims require that “the overcoat layer does not contain a coloring agent.”

Unlike the overcoat layer of the presently pending claims, the non-discoloring layer in the ozone indicator of JP’360 comprises ink, i.e. a coloring agent. The JP’360 reference is very clear that ink is a requirement. For example, JP’360 discloses in paragraph [0027] that “any ink can be used for the non-discoloring layer in the ozone indicator of this invention unless it discolors by ozone. As such ink-marketing- color ink [inks available on the market] can also usually be used. For example, water color ink, oil based ink, non-solvent mold ink, etc. can be used.” Furthermore, Example 4, paragraph [0052] in JP’360 teaches that “the common color ink used in a non-discoloring layer was toned”.

In contrast to JP’360, the overcoat layer of the claimed invention does not contain a coloring agent and is formed by using a coating solution prepared by dissolving a film-forming polymer in water or an aqueous solvent. By employing the overcoat layer, not only qualitative but also quantitative detection can be made even in an atmosphere containing a very high concentration of ozone. In addition, the ozone indicator can be designed such that the degree of color change will vary with different temperature and/or humidity values.

Since JP’360 teaches a coloring agent in the non-discoloring layer, there is no motivation to design the ozone indicator having an overcoat layer which does not contain a coloring agent and is formed by using a coating solution prepared by dissolving a film-forming polymer in water or an aqueous solvent. Even if such a motivation were present, there would be no expectation of achieving the above-mentioned advantages. Accordingly, the claimed invention is both novel and nonobvious over the JP’360 reference.

IV. Novelty over 6,227,685

The Examiner has rejected the pending claims under 35 USC 102(e) as being anticipated by Omatsu (6,117,685). The Examiner asserts that Omatsu discloses an overcoat layer comprising an ethylcellosolve (ethyl cellulose) as its main component. However, Omatsu does not teach all of the limitations of the claimed invention. In particular, Omatsu teaches neither that “the overcoat layer of the present invention does not contain a coloring agent” nor that the overcoat layer “is on the surface of the color change layer.” Additionally, the product-by-process limitation set forth in the claim further distinguishes the claimed invention from Omatsu.

Omatsu clearly discloses at column 7, lines 24-35 that the overcoat layer comprising an ethylcellosolve as the main component, which the examiner cites, includes ink. Thus, this layer includes a coloring agent and cannot anticipate the claimed invention in which the overcoat layer does not contain a coloring agent.

The Examiner did not attribute any patentable weight to the product-by-process limitations recited in Applicants' claims. However, this is clearly improper. According to M.P.E.P. § 2173.05(p), a "product-by-process claim, which is a product claim that defined the claimed product in terms of the process, by which it is made, is proper." (citations omitted). Rather than completely disregarding the patentable weight of such a limitation, the "structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art." M.P.E.P. § 2113. In the present case, the process does imply a structure that should be given patentable weight.

The pending claims recite that the overcoat layer is formed by using a coating solution prepared by dissolving a film-forming polymer in water or an aqueous solvent. In the structure that results from this fabrication method, the overcoat layer (transparent layer), which contains a coloring agent, is laminated on the color-changing layer without a clearance. As a result, ozone reaches and changes the color-changing layer through the overcoat layer.

In contrast to the structure implied by the process steps recited in Applicants' claims, Omatsu's overcoat layer is merely connected to a color changing layer (substrate) by a supporting means, as shown Fig 1. That is, the ozone indicator of Omatsu has a structure in which there is a clearance between the transparent sheet (overcoat layer) and the color-changing layer (substrate). In Omatsu, the ozone concentration is detected by means of the ozone passing through the clearance. This is described in Omatsu at column 3, lines 41-44, which states "ozone diffuses through the clearance between the transparent resin sheet and the substrate or into the substrate gradually to cause the front of the color change to advance toward the central part of the substrate."

The ozone detection mechanism or function of the presently claimed invention is substantially different from that of Omatsu. Omatsu discloses neither that "the overcoat layer does not contain a coloring agent" nor that the overcoat layer "is on the surface of the color change layer". Moreover, the structure implied by the product-by-process limitation is also absent in Omatsu.

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Applicant notes that at the time the claimed invention was made, it was the subject of an obligation of assignment to the same entity as the owner of the Omatsu '685 patent. Therefore, Omatsu '685 is not available as prior art for obviousness purposes in view of 35 U.S.C. § 103(c). Accordingly, the pending claims are patentable over the disclosure of the Omatsu '685 patent.


CONCLUSION

In view of the above, the claims are submitted to be in condition for allowance. Reconsideration and withdrawal of all outstanding rejections are respectfully requested. Allowance of the claims at an early date is solicited. If any points remain that can be resolved by telephone, the Examiner is invited to contact the undersigned at the below-given telephone number.

Respectfully submitted,

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